



**Applied EcoSystems, Inc.**  
Environmental Management, Consulting & Field Services

November 21, 2017

Project # 11-4317-102

Mr. Brandon Pursel (pursel.brandon@epa.gov)  
U.S. Environmental Protection Agency, Region 5  
Land and Chemicals Division  
77 West Jackson Blvd., DE-9J  
Chicago, IL 60604-3590

Subject: Proposed Additional Sampling and Analysis  
Flint West Facility #12990  
Flint, Michigan  
USEPA ID No. MIK204011722A

Dear Mr. Pursel:

Applied EcoSystems, Inc. (Applied EcoSystems), in response to recent discussions between the United States Environmental Protection Agency (USEPA) and RACER, is proposing sampling groundwater at select locations at the Flint West #12990 Site.

Perfluorinated chemicals (PFCs), including Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS) and 1,4 Dioxane (8260 SIMS mode) analysis is proposed for groundwater samples to be collected from the following monitoring wells: MW-101S, MW-102S, MW-111S and MW-112S. The wells are those located closest to the former trichloroethene degreaser and the former chromium plater. A map showing the well locations is included in Attachment A.

**Procedures:**

Sampling will be conducted in general accordance with the USEPA-approved 2011 Investigation Workplan, Field Sampling Plan and Quality Assurance Project Plan, using standard low flow procedures. Only new HDPE and silicon tubing will be used in the sampling process. Additional sample collection procedures to prevent cross contamination are included in Attachment B.

**Analysis:**

Samples will be analyzed for PFCs by TestAmerica Laboratories, Inc. in Sacramento, California using Modified Method 537.

Samples will be analyzed for 1,4 Dioxane by Merit Laboratories, Inc. in Lansing, Michigan using Method 8260-SIM.

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Quality Assurance/Quality Control (QA/QC) samples will be collected and will include one duplicate, one field blank, and one trip blank.

TestAmerica Laboratories, Inc. and Merit Laboratories, Inc. will provide level IV data packages.

**Schedule:**

The sampling is proposed as part of the second annual 2017 routine monitoring event, to be conducted in November or December 2017.

**Reporting:**

The sample analytical results will be included in a Data Report, to be issued approximately February 2018.

If you have any questions, please do not hesitate to contact me.

Kind regards,

APPLIED ECOSYSTEMS, INC.



Mike Smith  
Senior Technical Manager

MDS:lm

c: Mr. Dave Favero, RACER Trust







**Applied *Eco*Systems, Inc.**

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# PFCs Sampling Checklist

Date: \_\_\_\_\_

Weather (temp./precipitation): \_\_\_\_\_ Site Name: \_\_\_\_\_

## ***Field Clothing and PPE:***

- ☐ No clothing or boots containing Gore-Tex™
- ☐ All safety boots made from polyurethane and PVC
- ☐ No materials containing Tyvek®
- ☐ Field crew has not used fabric softener on clothing
- ☐ Field crew has not used cosmetics, moisturizers, hand cream, or other related products this morning
- ☐ Field crew has not applied unauthorized sunscreen or insect repellent

## ***Field Equipment:***

- ☐ No Teflon® or LDPE containing materials on-site
- ☐ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- ☐ No waterproof field books on-site
- ☐ No plastic clipboards, binders, or spiral hard cover notebooks on-site
- ☐ No adhesives (Post-It Notes) on-site

- ☐ Coolers filled with regular ice only. No chemical (blue) ice packs in possession

## ***Sample Containers:***

- ☐ All sample containers made of HDPE or polypropylene
- ☐ Caps are unlined and made of HDPE or polypropylene

## ***Wet Weather (as applicable):***

- ☐ Wet weather gear made of polyurethane and PVC only

## ***Equipment Decontamination:***

- ☐ "PFC-free" water on-site for decontamination of sample equipment. No other water sources to be used.
- ☐ Alconox and Liquinox to be used as decontamination materials

## ***Food Considerations:***

- ☐ No food or drink on-site with exception of bottled water and/or hydration drinks (i.e., Gatorade and Powerade) that is available for consumption only in the staging area

If any applicable boxes cannot be checked, the Field Lead shall describe the noncompliance issues below and work with field personnel to address noncompliance issues prior to commencement of that day's work. Corrective action shall include removal of noncompliance items from the site or removal of worker offsite until in compliance.

Describe the noncompliance issues (include personnel not in compliance) and action/outcome of noncompliance:

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Field Lead Name: \_\_\_\_\_

Field Lead Signature: \_\_\_\_\_ Time: \_\_\_\_\_

## PFC Sampling – Prohibited and Acceptable Items

Prohibited	Acceptable
<b>Field Equipment</b>	
Teflon® containing materials	High-density polyethylene (HDPE) materials
Low density polyethylene (LDPE) materials	Acetate Liners
	Silicon Tubing
Waterproof field books	Loose paper (non-waterproof)
Plastic clipboards, binders, or spiral hard cover notebooks	Aluminum field clipboards or with Masonite
	Sharpies®, pens
Post-It Notes®	
Chemical (blue) ice packs	Regular ice
<b>Field Clothing and PPE</b>	
New cotton clothing or synthetic water resistant, waterproof, or stain-treated clothing, clothing containing Gore-Tex™	Well-laundered clothing made of natural fibers (preferable cotton)
Clothing laundered using fabric softener	No fabric softener
Boots containing Gore-Tex™	Boots made with polyurethane and PVC
Tyvek®	Cotton clothing
No cosmetics, moisturizers, hand cream, or other related products as part of personal cleaning/showering routine on the morning of sampling	<p><b>Sunscreens</b> - Alba Organics Natural Sunscreen, Yes To Cucumbers, Aubrey Organics, Jason Natural Sun Block, Kiss my face, Baby sunscreens that are “free” or “natural”</p> <p><b>Insect Repellents</b> - Jason Natural Quit Bugging Me, Repel Lemon Eucalyptus Insect repellent, Herbal Armor, California Baby Natural Bug Spray, BabyGanics</p> <p><b>Sunscreen and insect repellent</b> - Avon Skin So Soft Bug Guard Plus – SPF 30 Lotion</p>
<b>Sample Containers</b>	
LDPE or glass containers	HDPE or polypropylene
Teflon-lined caps	Unlined polypropylene caps
<b>Rain Events</b>	
Waterproof or resistant rain gear	Gazebo tent that is only touched or moved prior to and following sampling activities
<b>Equipment Decontamination</b>	
Decon 90®	Alconox® and/or Liquinox®
Water from an on-site well	Potable water from municipal drinking water supply
<b>Food Considerations</b>	
All food and drink, with exceptions noted on right	Bottled water and hydration fluids (i.e, Gatorade® and Powerade®) to be brought and consumed only in the staging areas

TestAmerica Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605

**Prepared for:**

Steve Duvernois  
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Tel: (810) 715-2525

Prepared by McKnight, Taryn A  
Date 11/14/2017  
Expiration Date 2/12/2018  
Est. Start Date 11/27/2017

**Project: PFAS, Flint Racer**

**Quote Number: 32010411 - 0**

**Quarterly Groundwater**

Matrix	Method	Test Description	Analyte	RL	MDL	Units
Water	537 (modified)	PFOA/PFOS Only	Perfluorooctanoic acid (PFOA)	2.00	0.850	ng/L
			Perfluorooctane Sulfonate (PFOS)	2.00	0.540	ng/L
		<b>Isotope Dilution</b>				
			13C4 PFOS			
			13C4 PFOA			
Water	537 (modified)	PFAS, Standard List (21 Analytes)	Perfluorobutanoic acid (PFBA)	2.00	0.350	ng/L
			Perfluoropentanoic acid (PFPeA)	2.00	0.490	ng/L
			Perfluorohexanoic acid (PFHxA)	2.00	0.580	ng/L
			Perfluoroheptanoic acid (PFHpA)	2.00	0.250	ng/L
			Perfluorooctanoic acid (PFOA)	2.00	0.850	ng/L
			Perfluorononanoic acid (PFNA)	2.00	0.270	ng/L
			Perfluorodecanoic acid (PFDA)	2.00	0.310	ng/L
			Perfluoroundecanoic acid (PFUnA)	2.00	1.10	ng/L
			Perfluorododecanoic acid (PFDoA)	2.00	0.550	ng/L
			Perfluorotridecanoic Acid (PFTriA)	2.00	1.30	ng/L
			Perfluorotetradecanoic acid (PFTeA)	2.00	0.290	ng/L
			Perfluorobutanesulfonic acid (PFBS)	2.00	0.200	ng/L
			Perfluorohexanesulfonic acid (PFHxS)	2.00	0.170	ng/L
			Perfluoroheptanesulfonic Acid (PFHpS)	2.00	0.190	ng/L
			Perfluorooctanesulfonic acid (PFOS)	2.00	0.540	ng/L
			Perfluorodecanesulfonic acid (PFDS)	2.00	0.320	ng/L
			Perfluorooctane Sulfonamide (FOSA)	2.00	0.350	ng/L
			N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	20.0	3.10	ng/L
			N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	20.0	1.90	ng/L
			6:2FTS	20.0	2.00	ng/L
			8:2FTS	20.0	2.00	ng/L
		<b>Isotope Dilution</b>				
			13C4 PFBA			



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**Quarterly Groundwater**

Matrix	Method	Test Description	Analyte
Continued		Isotope Dilution	
			13C5 PFPeA
			13C2 PFHxA
			13C4-PFHpA
			13C4 PFOA
			13C5 PFNA
			13C2 PFDA
			13C2 PFUnA
			13C2 PFDoA
			13C2-PFTeDA
			13C3-PFBS
			18O2 PFHxS
			13C4 PFOS
			13C8 FOSA
			d3-NMeFOSAA
			d5-NEtFOSAA
			M2-6:2FTS
			M2-8:2FTS

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**Analytical Sample Information**

Analysis	Method	Matrix	Preservative	Client Sub List Desc Container	Volume Required	Holding Time
Fluorinated Alkyl Substances	PFC_IDA	Water	None	PFAS, Standard List (21 Analytes) Plastic 250ml - unpreserved	500 mL	14 Days
Fluorinated Alkyl Substances	PFC_IDA	Water	None	PFOA/PFOS Only Plastic 250ml - unpreserved	500 mL	14 Days

*Hold Times listed above represent the minimum allotted time between sampling and lab extraction, prep or analysis.*

*Multiple analyses may be consolidated into fewer containers. Please contact your Project Manager for clarification when requesting sample containers.*

*Except for some special tests, all samples should be kept cold at 6 degrees C.*